

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

[EIGHTH SERIES.]

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"..... per litora spargite muscum,  
Naiades, et circum vitreos considite fontes:  
Pollice virgineo teneros hic carpite flores:  
Floribus et pictum, divæ, replete canistrum.  
At vos, o Nymphæ Craterides, ite sub undas;  
Ite, recurvato variata corallia trunco  
Vellite muscosis e rupibus, et mihi conchas  
Ferte, Deæ pelagi, et pingui conchylia succo."  
*N. Parthenii Giannettasi, Ecl. 1.*

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I.—*Descriptions and Records of Bees.*—LX.  
By T. D. A. COCKERELL, University of Colorado.

*Lithurgus guamensis*, sp. n.

♀.—Length 13–14½ mm.

Very close to *L. albofimbriatus*, Sich. (Tahiti), and *L. atratiformis*, Ckll. (Australia), but differing in various small characters. Vertical supraclypeal ridge not reaching lower margin of supraclypeal area, but leaving a punctured region between end of ridge and top of clypeus (no such punctured region in *albofimbriatus*); hair of cheeks and anterior coxæ fulvous; front and occiput with erect black or dark fuscous hair; hair of pleura black; scutellum not or barely depressed in middle; first recurrent nervure joining second s.m.; marginal nervure of hind wing not bent or angular near origin (in *albofimbriatus* it is bent or even slightly appendiculate); white abdominal bands as broad as in *L. atratiformis*; hair at apex of abdomen entirely black; sides of abdominal dorsum more strongly punctured than in *albofimbriatus*, herein like *atratiformis*.

*Ann. & Mag. N. Hist.* Ser. 8. Vol. xiv. 1

*Hab.* Island of Guam, 3 ♀ (*D. T. Fullaway*). U.S. National Museum.

This is really nearer to the Australian than to the Tahitian insect.

*Megachile fullawayi*, sp. n.

♀.—Length 9–10 $\frac{1}{4}$  mm.

Black, with white hair and entire white abdominal bands; vertex and disc of mesothorax, and scutellum more or less, with dark fuscous hair; ventral scopa mainly bright ferruginous, but broadly white basally, and black on apical part of last segment. Exactly like *M. palmarum*, Perk., from the Hawaiian Is., except that the clypeus has a smooth shining band down the middle (wanting in *palmarum*); the mesothorax has short pale appressed hair anteriorly and posteriorly; the tegulæ are more or less reddish, at least on margin; the ventral scopa is white basally; and there is black hair at sides of abdominal segments 4 to 6.

♂.—Length about 8 mm.

Like *palmarum*, but very easily separated by the apical transverse keel of abdomen (sixth segment), which is slightly depressed in middle, with about five little sharp teeth (broadly, deeply, semicircularly incised in *palmarum*). Tegulæ rather light reddish; mesothorax with appressed ochraceous hair, broadly in front, narrowly behind; middle of third and fourth ventral segments of abdomen each with a marginal patch of orange-fulvous hair, quite separate from the white hair-bands.

*Hab.* Island of Guam, 2 ♀, 1 ♂ (*D. T. Fullaway*). U.S. National Museum.

Easily known from *M. hedleyi*, Rainbow (Funafuti) by the hyaline (faintly dusky) wings and white abdominal bands. The male is the type.

*Halictus saffordi*, sp. n.

♀.—Length 7–8 mm.

Robust, with very little hair on head and body; head broad; clypeus sparsely but distinctly punctured, bluish green, suffused by dark purplish toward lower margin; mandibles with a bright ferruginous subapical patch; supra-clypeal area convex, purple-black, sparsely punctured; sides of face blackish; front dull purplish, shining at sides; cheeks olive-green above, suffused with crimson below; flagellum rather long and slender, dull red beneath except at base; mesothorax and scutellum shining violet (varying

to yellowish green suffused with violet), with extremely fine punctures; tubercles reddish, with a dense fringe of pale hair; pleura green suffused with red, but there is a violet area just below the wings; metathorax green, mostly dull, but brilliantly shining at sides above; area of metathorax, except apically, quite dull, and covered with fine but very distinct radiating rugæ; tegulae dark reddish. Wings dusky; nervures and stigma dark rufo-fuscous; outer r. u. and t.-c. much weakened; first r. u. joining second s. m. some distance before end; third s. m. short, smaller than second. Legs dark reddish; middle femora with a large tuft of orange hair at base beneath; hind femora strongly arcuate, with a curled scopa on underside; hind spur with four stout teeth, the two basal ones long. Abdomen broad, shining, scarcely punctured, not banded, dark green, suffused with violet at sides (or very little so); the second segment may have a subbasal band of reddish colour; venter with an abundant light reddish curled scopa.

Microscopical characters:—Front longitudinally lineolate and minutely corrugated; vertex transversely lineolate; mesothorax very delicately tessellate between the punctures; tegulae anteriorly with very few piliferous punctures; area of metathorax with about 26 rugæ, between which it is transversely striated basally, but the golden-tinted apical part beyond the rugæ is minutely cancellate; abdomen very finely transversely lineolate.

*Hab.* Island of Guam, 3 ♀ (*D. T. Fullaway*). U.S. National Museum.

Very close to *H. perpessicius*, Kohl, from Samoa, but the hind femora are strongly arched beneath, without a secondary subapical swelling. The colour also seems rather different. I have never seen *H. perpessicius*, and have depended on Kohl's description and figures. The new species is named after W. E. Safford, who has published a most excellent account of Guam.

It is singular that the above three species from Guam are all very closely related to other species of the Pacific islands, yet distinguishable. How did they reach the island? Could they have been brought with plants by the early settlers before the historic period? How much time is necessary to bring about the modification observed? Analogous questions are raised with respect to the mammals of the Andaman and Nicobar Islands by G. S. Miller in Proc. U.S. National Museum, xxiv. p. 791.

*Prosopis guamensis*, sp. n.

♀.—Length about  $7\frac{1}{2}$  mm.

Robust; head and thorax black; tubercles, scutellum, and postscutellum yellow (turned red by cyanide in the material before me); upper border of prothorax with a small yellow mark on each side; face-marks reduced to a very obscure narrow band along each inner orbit; head broad and massive; mandibles thick, bidentate at end; clypeus very high, irregularly roughened with striæ and punctures; flagellum dark reddish beneath; front shining, with large punctures, those in the middle crowded, but on each side is a depression with scattered very large punctures; cheeks with rather small punctures; mesothorax shining, rather sparsely but strongly punctured, the longitudinal grooves distinct; area of metathorax crescentic, well defined, shining, with distinct ridges; sides of metathorax with white tomentum; tegulæ black. Wings clear, with dark fuscous nervures and stigma; first r. n. meeting first t.-c.; second s.m. very long; second r. n. with a strong double curve. Legs black, the hind femora reddish. Abdomen shining, dark green, finely subobsoletely punctured, second segment blackened basally.

♂.—(Head lacking in specimen studied.) Similar to the female, but more slender; anterior tibiæ and tarsi ferruginous; abdomen bluer and more distinctly punctured. This was examined by Dr. R. C. L. Perkins, and bears the following label in his handwriting:—"Belongs to group with largely developed wings of seventh ventral segment and bifurcate apex to eighth segment, the bifurcations expanded, as in *Prosopis cressoni*; see Metz's paper, Tr. Am. Soc. xxxvii. pl. iv. fig. 53 &c. This group is American, Australian, and European, and probably cosmopolitan." The terminal lobes or divisions of the eighth ventral plate are large and abundantly fringed with very long, coarse, dark branched hairs. The sagittæ are turned downward at the end, the downward curve beginning about the level of the ends of the stipites, which are furnished with long dark hairs.

*Hab.* Island of Guam (*D. T. Fullaway*). U.S. National Museum.

Not at all related to the Hawaiian *Prosopididæ*, but close to some of the Australian forms, from which it is readily known by the face-markings.

*Paracolletes flavomaculatus*, Cockerell.

A female from Kuranda (*Dodd*; Queensl. Mus. 86) has a patch of light fulvous hair on each side of face.

*Paracolletes cæruleotinctus*, Cockerell.

Sunnybank, Brisbane, Nov. 19, 1913 (*Hacker*; Queensl. Mus. 90).

*Paracolletes erythrurus*, sp. n.

♀.—Length about 12 mm.

Head and thorax black, abdomen bright but not shining ferruginous; wings unusually short, strongly dusky; head large and broad; hair of cheeks white, of sides of face white with fulvous overlapping, of front and vertex pale fulvous; clypeus convex, shining, with irregularly scattered not very large punctures, its lower margin red; labrum and mandibles, except apically, bright red; scape long and curved, red at extreme base; flagellum dull red beneath, except basally; mesothorax dull, with small indistinct punctures; hair on tubercles fulvous, on pleura creamy white, on thorax above short and thin, pale fulvous, more or less tipped with fuscous; area of metathorax dull; tegulæ dark red; stigma practically obsolete, nervures fuscous; b. n. falling just short of t.-m.; second s.m. of good size, receiving first r. n. about or a little beyond middle; third s.m. elongated, receiving second r. n. a short distance before end. Legs black, with the tarsi and anterior tibiæ in front clear ferruginous, middle tibiæ also reddened at end and in front; hair of legs pale, fulvous on tibiæ and tarsi; middle basitarsi broad, concave beneath; hind tibial scopa stained with fuscous above, especially basally. Abdomen dull red, without evident punctures and without hair-bands except on fifth segment (and to some extent at sides of fourth), where there is a greyish-brown band; sides of second segment with a large round black spot; venter with hair-bands, golden fulvous in middle, white at sides.

♂.—The convex subglobular labrum, mandibles (except apical margin), and clypeus cream-colour; face and front densely covered with bright golden-fulvous hair; scape bright red; flagellum long, crenulate, and obscure red beneath; head and thorax above with bright fulvous hair; knees (hind ones very broadly), tibiæ, and tarsi red, middle tibiæ largely blackish on outer side; apical abdominal seg-

ments without hair-bands; apical plate broadly rounded; venter with long white hair.

*Hab.* Yallingup, near Cape Naturaliste, S.W. Australia, Sept. 14–Oct. 31, 1913 (*R. E. Turner*). British Museum.

Allied to *P. bimaculatus*, Sm., differing by the dark wings, details of venation, &c. There is a strong superficial resemblance to *P. fimbriatulus*, Ckll., but that species differs greatly in the structure and sculpture of the abdomen. The female of *P. erythrurus* is the type.

All the bees of Turner's recent collections which I have received from the British Museum have been ascertained by Mr. Meade-Waldo to be distinct from all the species in the Museum, so that after I have compared them with my own materials they have been compared with most of the types of Australian bees.

*Paracolletes nigrocinctus*, sp. n.

♂.—Length 11–12 mm.

Head and thorax black; abdomen dull red, segments 1 to 5 having narrow subapical black bands, the margin beyond subhyaline, and on segments 2 to 5 having a thin fringe of short silvery-white hairs; middle of first segment wholly black; venter of abdomen dark, with light reddish (tegumentary) bands; clypeus, except the broad dark upper and lateral margins, reddish-cream colour, this light area sometimes strongly trilobed; labrum pale, not swollen; mandibles red; scape short, black; flagellum long, obscure reddish beneath; face, front, and cheeks with long pale hair, distinctly fulvous-tinted over clypeus; occiput with long fuscous hair; mesothorax and scutellum somewhat shining, with rather sparse shallow punctures; area of metathorax shining but not polished, not transversely keeled; discs of mesothorax and scutellum with abundant long dark fuscous hair, but pale greyish hair on thorax anteriorly, between mesothorax and scutellum, and on metathorax; a large patch of fuscous hair just below tegulæ; tegulæ dark rufous. Wings dusky greyish, nervures and the small stigma fuscous; b.n. falling a little short of t.-m.; second s.m. small, square, receiving first r.n. about middle; third s.m. long, receiving second r.n. some distance before end. Knees, tibiæ, and tarsi red, the tibiæ broadly suffused with black. Abdomen feebly punctured on a dull ground; first segment with much white hair; apical plate rather small; sixth ventral segment with a median erect tuft of pale hair.

*Hab.* Yallingup, near Cape Naturaliste, S.W. Australia,

Sept. 14–Oct. 31, 1913 (R. E. Turner). 4 ♂, British Museum.

A very distinct species, known from all others by the ornamentation of the abdomen. It is related in a general way to *P. bimaculatus* and *erythrurus*.

*Megachile abdominalis*, Smith.

Brisbane, Sept. 12, 1913 (Hacker; Queensl. Mus. 94).

*Euryglossina microxantha*, sp. n.

♀.—Length about  $3\frac{1}{2}$  mm.

Light sulphur-yellow; eyes olive-green; a black line on each side extending from near outer side of lateral ocelli downward near orbital margin to about level of front; antennæ placed very low down; mesothorax obscurely suffused with pale reddish; area of metathorax triangular, dark reddish-brown, with a central triangular yellow mark. Wings clear, stigma and nervures wholly pallid, light yellowish; b. n. falling far short of t.-m.; first r. n. joining first s.m. some distance from apex; lower side of first s.m. straight. Abdomen broad, with five broad reddish-brown bands, which end abruptly before the lateral margins; venter entirely yellow.

*Hab.* Mackay, Queensland, at flowers of *Leptospermum*, October 1898 (Turner). British Museum.

Related to *E. sulphurella*, Ckll., but easily known by the dark abdominal bands. It looks just like a small and pallid *Euryglossa furcifera*, Ckll., but that differs generically in the venation, the first r. n. entering the second s.m., while the second s.m. is much higher in proportion to its length.

*Euryglossa brachycera*, sp. n.

♀.—Length about 5 mm.

Light sulphur-yellow, slightly and variably suffused with pale reddish, especially on the mesothorax; mandibles reddened apically; a black line on each side passes outward from the lateral ocelli and, abruptly bending, descends parallel with the orbit to about level of middle of front; antennæ normal in position, but extremely short, the thick and very short flagellum dusky above and light ferruginous beneath; transverse sutures of thorax above all narrowly black; area of mesothorax cup-shaped in outline, black, with a large transverse yellow mark. Wings clear, nervures and stigma entirely pallid, slightly yellowish: lower side of

first s.m. arched; first r. n. entering the high second s.m. near base; stigma large. Abdomen broad, with dark brown bands; first segment with a median dark line and an oblique band on each side of basal declivity, and also a broad band along apical margin; second to fourth segments with basal and apical bands, the basal bands not reaching extreme base, so that the apical band of one segment is separated from the basal of the next by more or less of a yellow line; apex suffused with reddish brown.

*Hab.* Townsville, Queensland (*F. P. Dodd*, 5. 1. 03). British Museum.

A very distinct species, not unlike *E. furcifera*, but much larger.

*Halictus mirandus*, sp. n.

♀.—Length about 10–10½ mm.

Black, with the femora (anterior ones only apically), tibiae, and tarsi bright chestnut-red; front and mesothorax obscurely æneous or greenish; head broad; clypeus shining, strongly punctured; front granular; flagellum very dark reddish beneath; cheeks with white hair, face, front, and vertex with black, but vertex, front, and sides of face also with pale hair; disc of mesothorax brilliantly shining, with scattered large and minute punctures; mesothorax and scutellum with erect black hair, but pale hair on mesothorax anteriorly and sides of scutellum; postsutellum densely tomentose anteriorly; tubercles and pleura with pale fulvous-tinted hair; area of metathorax large, finely granular, obscurely minutely lineolate, bounded by a groove, immediately beyond which is a ridge; posterior truncation sharply defined at sides; tegulae clear ferruginous. Wings dusky reddish, quite strongly coloured, stigma and nervures bright ferruginous; second s.m. large; first r. n. meeting second t.-c.; outer r. n. and t.-c. weakened. Legs with pale golden-reddish hair; hind spur with two broad teeth. Abdomen black (second segment obscurely greenish basally), shining, very minutely punctured, with coarse black hair at sides and on apical part; segments 2 to 4 having near their latero-basal corners rather large, round, clearly defined patches of dense snow-white tomentum; first segment with a median tubercle.

*Hab.* Yallingup, near Cape Naturaliste, S.W. Australia, 4 ♀, Sept. 14–Oct. 31, 1913 (*R. E. Turner*). British Museum.

A beautiful species, related to *H. conspiciuus*, Sm. Mr.



Meade-Waldo has kindly compared it with Smith's type of *conspicuus*, and finds it certainly distinct. He finds that the prominent keel-like tubercle on the first dorsal abdominal segment of *mirandus* is wholly wanting in *conspicuus*, which also has the postsentellum transversely striate and the venter with a fulvous scopa. The scanty hair on abdominal venter of *mirandus* is light fulvous on basal half, black on apical.

*Andrena berberidis* (Cockerell).

According to Mr. Viereck, this is identical with *A. neuronæ*, Vier., from Seattle, Wash. *A. neuronæ* has never been fully described, but in Viereck's unpublished table of *Andrena* it is said to have the process of labrum not emarginate, whereas in *berberidis* it is very distinctly emarginate. The two are, however, very much alike, and may represent races of a single species.

On April 27, 1913, at flowers of *Odostemon*, at Boulder, Colorado, Mrs. M. D. Ellis took what is evidently the male of *A. berberidis*. On the same day, at the same flowers, she also took the female. The male *berberidis* looks at first sight like *A. leptanthi*, V. & C., which is the male of *A. porterae*, Ckll. It differs from *leptanthi* in the much shorter clypeus; shorter malar space; black hair behind upper end of eyes; angulation of the very broad cheeks lower (about level with middle of eye); anterior part of mesothorax (except median smooth line) dull and granular, not punctured; second s.m. much narrower; apical plate of abdomen smaller. They are certainly very closely allied.

*Andrena ellisiae*, sp. n.

♀.—Length about 12 mm.

Rather slender, black (tibiæ, tarsi, and antennæ all dark); hair of head and thorax rather short and stiff, very pale, with a greyish-ochreous tint; legs with mostly whitish hair, but light seal-brown on inner side of tarsi, the tuft on hind knees pale reddish; abdomen without conspicuous hair, except the bands and caudal fimbria; the bands on bands 2 to 4 broad and white, very narrowly interrupted on 2, but scarcely attenuated toward the interruption; band on fifth segment pale golden, fimbria light golden-ferruginous. Head broader than long, eyes slightly diverging above; process of labrum broad, rather narrowly truncate (not emarginate) apically; malar space linear; cheeks rounded, normal; clypeus prominent, microscopically tessellate, shining in middle, with rather close large punctures, and a

narrow elevated median line; facial foveæ very pale ochrey, rather narrow, separated from eye by a shining line, and going a little below level of antennæ; third antennal joint longer than the next two together, but not so long as the next three; mesothorax dullish, somewhat shining, with rather close punctures, weaker and smaller than those on clypeus; area of metathorax triangular, with no elevated rim, more than its basal half quite coarsely roughened; tegulæ rufo-picceous. Wings dusky reddish, but not very dark; stigma and nervures light ferruginous; b.n. falling some distance short of t.-m.; second s.m. ordinary, receiving first r.u. in middle. Scopa of hind tibiæ pale ochreous, rather short and stiff; spurs pale ferruginous. Abdomen shining, finely but not very densely punctured, the first segment with scattered very minute punctures; second segment depressed less than half, but rather over a third.

*Hab.* Boulder, Colorado, at flowers of *Lepidium medium*, Greene, May 26, 1913 (*M. D. Ellis*).

In various tables this runs rather persistently to the vicinity of *A. arabis*, Rob., but that is only 10 mm. long and has a fuscous fimbria. In Viereck's Connecticut table it appears to run to *A. hilaris*, Sm., which is considerably larger and more robust, with darker wings, and the eyes converging above.

In the following key I record other species of *Andrena* (♀) taken by Mrs. Ellis at Boulder, and contrast them with *A. ellisiae*:—

- |  |                                  |
|--|----------------------------------|
| Hair at apex of abdomen black or nearly .....  | 1.                               |
| Hair at apex of abdomen pale or reddish or greyish.  | 2.                               |
| 1. Abdomen blue-black, very shiny (May 23-24, fls. <i>Hydrophyllum fendleri</i> ) .....  | <i>geranii</i> , Rob.            |
| Abdomen satiny green or blue (April 26, fls. <i>Salix</i> ; May 11, fls. <i>Taraxacum taraxacum</i> ) .....  | <i>candida</i> , Sm.             |
| 2. Tarsi clear red; flagellum red beneath (May 11, fls. <i>Salix</i> and <i>Taraxacum taraxacum</i> ; May 18, fls. <i>Rhus trilobata</i> ) .....                           | <i>salicinella</i> , Ckll.       |
| Basitarsi dark .....   | 3.                               |
| 3. Flagellum bright red at apex; abdomen strongly punctured; palpi very long and slender (May 22, fls. <i>Viola nuttallii</i> ) .....                                      | [Rob. <i>(Iomelissa) violæ</i> , |
| Flagellum not bright red at apex .....   | 4.                               |
| 4. Abdomen greenish; thorax with dull purplish tints above; stigma amber (April 26, 23 at fls. <i>Salix</i> ).<br>Otherwise, but all with amber stigma .....               | <i>illinoensis</i> , Rob.<br>5.  |
| 5. Abdomen, including first segment, very strongly punctured (April 28, fls. <i>Taraxacum taraxacum</i> )<br>First abdominal segment feebly or not clearly punctured ..... | <i>bridwelli</i> , Ckll.<br>6.   |

6. Larger: clypeus strongly punctured and with a median raised line ..... *ellisiae*, Ckll.  
 Smaller; middle of clypeus shining and broadly impunctate (May 23, fls. apple)..... *bipunctata*, [Cresson.]

The following are new records of Rocky Mountain *Andrena* :—

*Andrena apuheorum*, Cockerell.—Females at flowers of *Erigeron macranthus*, Estes Park, Colorado (*Frances Long*); Rio Ruidoso, New Mexico, at *Verbascum thapsus*, July 23, prox. 6900 ft. alt. (*C. H. T. Townsend*).

*A. prunorum*, Cockerell.—This species is generally represented in Northern Colorado by forms referable to variety or subspecies *gillettei*, Cockerell. A series examined showed much variation, and were tabulated as follows :—

- |  |    |                                     |
|--|----|-------------------------------------|
| Females.....   | 1. |                                     |
| Males.....   | 2. |                                     |
| 1. Scape red. (Boulder, July 14; <i>Paul M. Dean</i> ) .....   |    | <i>prunorum</i> .                   |
| Scape black. (Boulder, July 14; <i>Paul M. Dean</i> ) .....  |    | <i>prunorum gillettei</i> .         |
| 2. Second abdominal segment red, except a black mark on each side. (Colorado Springs, Colorado, at <i>Cynopterus acaulis</i> , April 19; <i>W. P. Cockerell</i> .) ..... |    | <i>prunorum gillettei</i> , form a. |
| Second abdominal segment black, with hind margin red .....   | 3. |                                     |
| 3. Hair of thorax above light fulvous; no lateral face-marks. (Florissant, Colorado, at <i>Antennaria microphylla</i> , June 20; <i>S. A. Rohwer</i> .) .....            |    | <i>prunorum gillettei</i> , form b. |
| Hair of thorax above white; minute lateral face-marks. (Boulder, at <i>Argemone</i> , July 15; <i>W. P. Cockerell</i> .) .....   |    | <i>prunorum gillettei</i> , form c. |

*A. luisii*, Cockerell.—Female. Half Way (Pike's Peak), Colorado, at *Rubus strigosus* (*Frances Long*).

*Colletes punctipennis*, Cresson.

Described from the female, from Orizaba, Mexico. From the British Museum I have what I suppose to be the male of the same species, from Guatemala (*F. Smith's* collection, 79. 22). Malar space short, more than twice as wide as long; apical half of mandibles reddish; labrum with a broad and rather shallow central pit; clypeus depressed in

middle, with large elongate punctures; flagellum ferruginous beneath; mesothorax shining, with large strong punctures; hair of head and thorax greyish white, a little black or dark fuscous about ocelli and on disc of mesothorax, and much on scutellum; legs robust; tegulae rufo-piceous. Wings hyaline, with a dark fuscous mark at the lower side of the small stigma, a large triangular fuscous patch in apical field, and both on anterior and posterior wings fuscous suffusion along the veins approaching the margin; second s.m. very broad. Abdomen shining, with narrow white hair-bands; first two segments strongly and coarsely punctured, third less strongly, the others scarcely punctured; apical region with dark fuscous hair, and long coarse dark hair at sides except basally.

I have no female *punctipennis* to compare, but the spotted wings are so remarkable that it is probably safe to assume the identity.

*Anthophora cingulata* (Fabr.) (*gilberti*, Ckll.).

Blackwall Range, April 25, 1911 (*Wild*; Queensl. Mus. 126).

*Anthophora rhodoscymna*, Cockerell.

♀.—Like the male, but much larger and more robust; length  $16\frac{1}{2}$  mm.; width of abdomen a little over 7 mm.; labrum and greater part of mandibles yellow; clypeus with a reversed yellow T; no supraclypeal or lateral face-marks; tegument of abdomen above entirely bright ferruginous; wings strongly brownish.

Brisbane, Jan. 20, 1914 (*Hacker*; Queensl. Mus. 125).

*Anthophora luzonica*, sp. n.

♀.—Length about 16 mm., width of abdomen  $6\frac{1}{2}$ .

Robust, black; head and thorax with mouse-coloured hair, being yellowish grey, strongly mixed with black above and on upper part of pleura, thin and black on clypeus, mainly black on front and face, but a band of prevailingly light hair across lower part of front; mandibles with nearly all of basal half cream-colour, the very large labrum the same, but stained with brownish, with the apical and basal margins narrowly, and spots at basal corners, piceous; clypeus densely punctured, with a narrow raised median line (failing above) and submarginal apical band, expanding at each lateral corner to a large patch, pale yellow; a pale

yellow stripe on each side next to clypeus, and a small triangular supraclypeal mark; scape black, flagellum obscurely subcastaneous beneath; third antennal joint as long as next three combined; mesothorax and scutellum finely and closely punctured; tegulae red. Wings reddish fuliginous. Legs black, tinged with reddish; outer side of tibiae and tarsi mainly with pale fulvous hair, but anterior tarsi with hair more fuscous, hind basitarsi with fuscous hair apically; hair on inner side of hind tibiae and tarsi black; spurs piceous. Abdomen black, with short inconspicuous black hair, and conspicuous but very narrow white hair-bands on apices of segments 1 to 4; first segment with fulvous hair at base; fifth segment with apical band very dark fuscous, but extreme sides of basal half with pale hair.

*Hab.* Mt. Makiling, Luzon (*C. F. Baker*, 2554).

Quite distinct from all previously known Philippine species. In Bingham's table of Indian species it falls next to *A. confusa*, Sm., which it resembles, differing in the colour of the hair on the legs. The marginal cell of *A. luzonica* is longer than usual, and the b.n. falls some distance short of t.-m.

*Apis binghami sladeni*, subsp. n.

Worker, with hair of thorax entirely rufo-fulvous; basal bands of abdomen inconspicuous.

*Hab.* Khasia Hills, India (*Sladen*).

True *Apis binghami*, Ckll., is from Celebes and the Philippines. One from the Philippines (*Baker*, 2553, marked "Bho") has the mesothorax covered with black hair and the light band at base of second abdominal segment very broad and distinct.

II.—*Revision of some Genera and Species of Starfishes, with Descriptions of a few new Genera.* By A. E. VERRILL.

[Plate I.]

Family Asteriidæ.

The genus *Leptasterias* (type, *L. mülleri*), established by me, 1866 (*Proc. Boston Soc. N. H.* vol. x. p. 350), has been adopted by some writers either as a full genus (*Perrier* and others) or as a subgenus (*Sladen*, 1889); others have often